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dilettante as regards his treatment of form; and if his worthy colleagues, the respected *Kapellmeister*, had not, instead of encouraging, looked patronizingly down upon him, though most of them were unable to write ten bars of music like that which sparkles all through his *Waffenschmied*, and *Czaar und Zimmermann*. (The biography of this composer is one of the saddest leaves in the history of German musicians!) Nicolai's *Lustige Weiber* is indisputably the best thing in the way of comic opera that has been composed in Germany during the present century, but it is the production of an eclectic, influenced by noble aspirations, and striving gradually to get rid of the impressions produced by the Italian school. After the *Lustige Weiber*, Flotow's *Stradella* and *Martha* must be considered as very successful comic operas; but the music is not German music; it is an eclectic specimen, put together with great taste, of all kinds of styles. The best numbers in both operas have a decided leaning to French models. What has since been offered by Herr von Flotow and others to the German public scarcely, with a very few exceptions, and those not exceedingly brilliant ones, deserves the name of vocal music, far less that which its composers claim for it! Of the mere imitations of Parisian models we will not say a word.

How is this phenomenon to be explained? The nation which asserts that it is the only nation possessing genuine humor; nay, the only nation understanding it, has for thirty years produced no national comic opera!

If we would examine into the reasons, we are nearly always told: no book that was anything like respectable could be procured, and, therefore, no good comic opera could be composed. Let us grant this reason to be a valid one; how is it that the humorous nation *par excellence* did not possess a truly comic author who could write such a book? To what class do the *Possen* or farces belong, of which a fresh one starts up every week, and for which there is so large a consumption of "music?" Among the authors of these farces, among the representatives of "superior imbecility," as it has been termed, is not there one, who, once in a way, could put a little common sense in sprightly verse? Let us cast a glance on our much reviled neighbors, the French, in whom many rigorists among us deny the existence of aught like "high natural gifts" in the way of music, or anything like "profound" intelligence, and whose comedies and comic operas, they assert, are not suited to the German character. In the first place, the French can boast of comic operas such as *Le Macon*, *La Dame Blanche*, and *Jean de Paris*, which have been acknowledged to be in every respect models by all musicians and lovers of music who do not stand up for tragic opera only (this is a point which we will discuss more at length presently); in addition to these, their composers have produced, moreover, *Le Postillon de Longjumeau*, *La Part du Diable*, and *Le Domino Noir*, which are admirable works, though they may not be entitled to the appellation of classic.[*] But this is not all; even the last twenty years, so utterly unfertile in Germany, have in France given birth to many *very* meritorious works of the class we are discussing. We will not dwell upon the small *genre* pictures: *Bon Soir*, *Monsieur Pantalon*; *Monsieur et Madame Denis*, and *La Chanson de Fortunio* (in our opinion the most successful operetta Offenbach ever wrote), because they are sufficiently known in Germany; we will speak of a three-act opera by Reber, because it affords in its entire plan, that is to say, in the words as well as in the musical treatment, the most brilliant proof that, without frivolity, without immorality, and without certain piquant additions, to which we will not allude more nearly, as our doing so would, at the present moment, be attended by no advantage, it is possible to produce an excellent opera, and because, despite the admirable things it contains, and the great success with which it met thirteen years ago in Paris, the opera in question is *utterly* unknown in Germany. It is called *Le Père Gaillard.* In the first place, the subject has been admirably chosen and is taken entirely from every-day life. A wine merchant,[†] possessed of a small estate in the country, and the author of some merry little songs, lives most happily with his wife, and on good terms with all his neighbors. He is well off, thanks partly to his own labor and partly to the liberal payment he receives for a foster-son, sent in his tenderest infancy mysteriously to him. A Paris Savant, who often flies from the turmoil of the capital, and seeks renewed health and amusement at Père Gaillard's, takes a particular interest in the boy, and on remarking that the latter, as he grows up, and the young daughter of his host, are fond of each other, on his death-bed appoints Père Gaillard his executor. The action begins at the moment the relatives of the deceased come to Père Gaillard's, for the purpose of being present at the reading of the will; they include an old military man and his wife (*a lady in whom Gaillard's wife thinks she perceives a striking likeness to her own foster-son*); a gentleman somewhat reduced in the world, etc. The two men, finding from Gaillard's account of his connection with the old Savant, that the property in all likelihood is not left to them, resolve, from a spirit of revenge and envy, to excite Gaillard's suspicions as to his wife's fidelity. They prove to him that, as he has himself long believed, his foster-son is the son of the old Savant, and that the visits of the latter, before the birth of the boy, to Gaillard's house, were intended not for Gaillard himself but for his wife. By means of malicious allusions, and perfidious interpretations of little incidents, perfectly harmless in themselves, but capable of a certain significance when spitefully made to bear upon one another, they pour poison in the honest man's heart. Thus, when, on the will being opened, he is found to be the principal heir, and when, moreover, a sealed letter is discovered, addressed to Madame Gaillard, and to be handed to her alone, Gaillard is convinced of the lady's guilt, without seeing that this public act of confidence in him is a proof of the contrary. When, lastly, his neighbors, who have made arrangements to give him an especial testimony of their respect, assemble at his house, and begin whispering together mysteriously, he fancies he perceives the proof that his domestic misfortune is already generally known, and suddenly declares to the relatives that he will not accept the inheritance. He forbids his daughter to think of a union with his foster-son; after previously persuading his man servant to marry the maid, he induces him to give up the match; and introduces disunion and confusion into the entire household. His jealousy and rage at last burst forth on his meeting his wife at the moment she is holding the mysterious letter in her hand. He wants to see it. She refuses to let him do so, on the ground that it concerns a third person, a lady, without whose permission she dare not even let *him* know the contents. He insists, and a passionate scene ensues, but, at the right moment, he awakes to the consciousness that a man who has lived for twenty years happily with his wife, ought not to yield to contemptible suspicion excited by those who are envious of him, and thus all at once destroy his domestic happiness; nay, he himself gives the letter to the lady—to the wife of the old officer, a lady whose confidence was enjoyed, in days of misfortune before her marriage, by the old Savant. The letter contains certain information which the reader will easily guess. Père Gaillard is once more himself; with light and joyous hand he arranges what he has thrown into disorder; and his neighbors and friends, wishing to pay him a particular mark of distinction, appoint him (unless we are mistaken) mayor, but he thankfully declines the honor, begging them still to bestow their friendship on him as an independent man.

We have purposely gone into the book at such length because it belongs to that class of work for which there are plenty of subjects in Germany; because it enters so thoroughly into the feelings and life of the middle classes, and because the point more especially to be proved was that we, who boast with justice of a higher kind of life among our middle classes than is to be found among those of other nations, have not understood how to profit by it, as well as the author of the French libretto has understood to profit by that of his country.

Of the music, we cannot speak at equal length, because our doing so would lead us from the subject of this article; we will, therefore, merely remark that it is conceived in a fresh, simple strain; that it contains many felicitous bits; and that it is worked out in a masterly manner. Let us now return to *German* comic opera and endeavor to discover why it is so utterly prostrate.

[TO BE CONTINUED.]

CURIOSITIES OF SOUND.

[CONCLUDED.]

Although a plucked string, or a string otherwise made to vibrate, produces sound by beating the air, it must be observed that a string is too small a thing of itself to set in motion such a mass of air as is necessary to fill a room with sound. Hence to make strings available for musical instruments they have to be so connected with larger surfaces as to set them in vibratory motion. These surfaces we call sound-boards, and in every stringed instrument the most important feature is this sonorous medium. The quality of this part of a piano, harp, violin, or lute, determines the entire goodness of the instrument. The sound-board must be able to take up and give out to perfection every vibration that every string offers to it, or it will not do its duty properly, and the instrument, of which it is almost body and soul, will be a bad one.

The high value set upon venerable violins is not entirely fanciful. The molecular changes that age works in the nature of the wood they are made of have an important influence over their sounding qualities. The very act of playing has a beneficial effect; apparently constraining the molecules of the wood, which in the first instance were refractory, to conform at last to the requirements of the vibrating strings.

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[*] We must here again expressly state that we leave out of consideration the absolute partisans of the Cothurnus,

[†] It is now thirteen years since we heard the opera in Paris, and we speak from memory only.

When a string, or a column of air in a pipe, is put in vibration, it not only vibrates as a whole, but it subdivides itself into proportional parts, each of which has its own time of vibration, and gives forth its own sound. These supplementary sounds are called harmonies; and it is the mingling of these with the fundamental note produced by the vibration of the whole string or air-column that determines the quality of the emitted tones, or what we, following the French, call *timbre*. A violin and a clarinet may give forth the same note; yet their sounds will be quite different in tone, because the auxiliary vibrations accompanying the fundamental note in each are different. The Germans call this property *klangfarbe*, literally *sound-color*. Professor Tyndall suggests that we should have an English name for it in lieu of the French word; he proposes *clang-tint* as the most expressive term, and uses it in his lectures.

Vibrations imparted to the air are frequently taken up by solid bodies at a distance. When music is being played, it is not uncommon to hear the lamp-glasses or other sounding bodies in the room join in the concert. In those cases the glass picks out from the general clamor that particular set of vibrations which it is capable of taking up, and rings in harmony with the note producing them whenever that note is sounded. A sounding tuning-fork will thus excite a silent one to play with it. Two pendulum-clocks fixed to the same wall, or two watches lying on the same table, will take the same rate of going, through this sympathetic communication of vibrations; and what is more remarkable, if one clock be set going and the other not, the ticks of the moving clock, transmitted through the wall, will start its neighbor.

It is in consequence of this property that the sound of a particular organ-pipe will sometimes break a particular window-pane, and that a powerful voice can crack a wine-glass by singing near it. The story goes that the Swiss muleteers tie up their bells at certain places, lest the tinkle should bring an avalanche down. Professor Tyndall, however, who, from his Alpine experience, ought to know, does not believe the dreaded catastrophe ever actually occurred.

But the most beautiful instances of sympathy in sound are afforded by the phenomena of musical or sensitive flames. To Professor Leconte, of the United States, belongs the honor of first calling attention to these curiosities. The professor was assisting at a musical party one evening, and he says, "Soon after the music commenced, I observed that the flame of a fish-tail gas-burner exhibited pulsations which were exactly synchronous with the audible beats. This phenomenon was very striking to every one in the room, and especially so when the strong notes of the violoncello came in. It was exceedingly interesting to observe how perfectly even the trills of this instrument were reflected on the sheet of flame. *A deaf man might have seen the harmony.*" By experiment, he found that the vibrations were not due to the shaking of the walls and floor of the room, but were communicated directly from the music to the flame. This interesting subject has been followed up extensively by Professor Tyndall and Mr. Barrett. It has been found that those flames only are sensitive which are on the point of flaring, or roaring, as some would term it. A common fish-tail burner, just at the point of fluttering, but still giving out a clear sheet of flame, is thrown into a state of commotion, spurting out quivering tongues, when a whistle is blown in its neighborhood. A bat's-wing jet behaves in a similar manner, throwing forth its tongues whenever an anvil is struck with a hammer. Professor Tyndall makes flames almost dance to music. He places a long rod-like flame and a short one side by side; upon blowing a whistle, the long flame becomes short, forked, and brilliant, and the short one long and smoky. The most marvellous flame exhibited at his lecture on this subject was a long thin one, twenty-four inches high. The slightest tap on a distant anvil reduced the height of this flame to seven inches. At the shaking of a bunch of keys it became violently agitated, and emitted a loud roar. The creaking of a boot set it in commotion; so did the crumpling of a piece of paper, or the rustle of a silk dress. The patter of a rain-drop startled it. At every tick of a watch held near it, down it fell. The twitter of a distant sparrow, or the chirp of a cricket, produced the same effect. When Professor Tyndall recited Spenser's verse, commencing, "Her ivory forehead full of bounty beams," the flame seemed to show its appreciation of the language; it noticed some sounds with a slight nod, to others it bowed more distinctly, and to certain others, again, it made a profound obeisance. To the performance of a musical box, the flame behaved like a sentient being. Jets of smoke are acted upon like flames, and so are jets of water, under certain conditions.

The loud noises which caves and rocky enclosures give forth when low sounds are uttered in them are well known. Bunsen has noticed that when one of the steam jets of Iceland breaks out near the mouth of a cavern, a thunder-like sound is produced. When a hollow shell is placed close to the ear, a low, murmuring noise is heard, which little children readily believe is the rolling of the sea. These phenomena are the effects of resonance, and resonance is the reinforcement of one sound by echoes of itself. If we speak into the mouth of a hollow tube the sound vibrations of the air pour down the tube to the bottom; striking against this, they are reflected, and turn back again; on their way back they meet others going down, and, union giving strength, they reinforce each other, and a doubled sound issues from the tube; it may be that several reflections conspire to reinforce the original sound several times, and then for a light whisper we have a loud roar.

The channel of the ear itself is a resonant cavity. Every one is familiar with the experiment of holding a poker by two strings, one in each hand, thrusting the fingers in the ears, and striking the poker against some hard substance. A sound is experienced by this means which is as deep and sonorous as a cathedral bell. It is due to the reinforcement of the vibrations of the poker in the hollow cavity of the ear. When we blow gently across a closed tube, such as the pipe of a key, the gentle fluttering of our breath is so reinforced by the resonance of the cavity that a whistle is produced. An organ-pipe gives forth its powerful note on the same principle; the prime source of the sound is only a gentle puff of wind blown against a sharp edge; this produces a flutter in the air, and some particular pulse of this fluttering is converted into a musical sound by the resonance of the associated column of air. If a tuning-fork be sounded and held in front of the slit near the bottom of an organ-pipe, the pipe will resound as if it had been blown into. But the pipe and the fork must yield the same note, or the former will not "speak." Any cavity will not fully resound to any sound; it is only when the note the pipe would give if blown into is the same as that given by the fork, that the resonance is perfect.

But while sound will augment sound, the opposite is likewise the case; sound will destroy sound. As this curiosity brings us to silence, it shall be the last mentioned here.

Sound consists in waves or pulses traveling through the air. Now a wave consists of an elevation and a depression. Suppose that two waves come together. If elevation meet elevation they augment each other, and a double elevation is the consequence; if depression meet depression, the effect is similar; we have a depression of double the depth. But if elevation meet depression, what follows? Clearly they destroy each, and the result is nothing. So it follows, that when two sounds meet in such a manner that the elevations of the waves of one meet the depressions of the waves of the other, silence is produced. Just the same thing occurs in the case of light, which is also a wave motion. An optician (we don't mean a spectacle and telescope maker, but a scientific student of optics) can make two rays of light so clash that darkness is the result. In an ordinary tuning-fork the vibrations of one prong do really, to a certain extent, destroy those of the other. Any one may convince himself of this by sounding a fork and then placing a cardboard tube over one prong,—of course without bringing tube and prong into contact. The emitted sound will be stronger than when both prongs were exposed. The actual silencing of one prong by another may thus be heard: sound a fork and hold it to the ear; slowly turn it round, and you will hear the sound continually die out and revive again. The points of silence are easily discovered; they are in the directions of the corners of the prongs. It is here that elevation—of the waves generated by one prong—meets depression—of the waves generated by the other prong. One kills the other, and we have silence.

OLE BULL IN THE WEST.

Since we first announced the arrival of the great Norwegian in this country, some three months since, he has been taken up warmly by the press all over the country; has been received by the people of a dozen cities with positive ovations, and has attracted larger audiences than any artist who has travelled the same route, for years past. The critics, without exception, pronounce him a grander, more refined and more effective performer than when he was last here, a dozen years ago. He has been greeted with torch-light processions, deputations and bouquets, and has, in simple truth, pursued a career of triumph, artistically and financially. On his arrival at Madison, Wis., a company of about